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Abstract

A model of 'harassment bribes,' paid for services one is entitled to, is developed to analyze the proposal to legalize paying these bribes while increasing fines on accepting them. We explore performance as regards corruption deterrence and public service provision. Costs of verifying reports make the scheme more effective against larger bribes and where institutions' quality is higher. A modified scheme, where immunity is conditional on reporting, addresses some key objections. The mechanism works better against more distortionary forms of corruption than harassment bribes, provided monetary rewards can compensate bribers for losing the object of the corrupt exchange. Results highlight strong complementarities with policies aimed at improving independence and accountability of law enforcers.

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1 Introduction

Corruption remains an endemic problem in the developing world and has become a central political issue in many countries. Empirical work has considerably advanced our understanding of how widespread corruption is and how it can cause harm.[1] Governments and agencies like the World Bank sponsored numerous anti-corruption programs. However, regarding insights how to best fight corruption in practice, it's been said that "research has been lagging behind policy."[2]

Recently, however, Kaushik Basu – then chief economist of the Indian goverment, now chief economist of the World Bank – proposed a specific approach to fight a certain form of corruption. In his (2011) pamphlet "Why, for a Class of Bribes, the Act of *Giving* a Bribe should be Treated as Legal" he describes a society in which bribery is "rampant ... a scourge that deserves to be banished," and proposes – for the case of "harassment bribes" that people pay to get services they are legally entitled to[3] – the following policy:

> *Legalize bribe-giving, double the fine for bribe-taking, and make the bribe-taker pay back the bribe if discovered.*

When a citizen bribes a bureaucrat, under traditional law the two become partners in crime. They thus lack incentives to report the activity. Under Basu's policy (BP), which he deems "fairly radical", incentives are provided for the bribe-giver to report the bribe-taker. If this is foreseen, the bureaucrat would not accept the bribe in the first place. That is the key idea.

Will it work? A hot debate has raged in Indian and international press. *The Economist* appeared sympathetic.[4] However, in some quarters the proposal stirred outrage and commentators

[1] See Svensson (2005) and Olken & Pande (2011) for excellent reviews.

[2] The citation is from Banerjee, Hanna & Mullainathan (2012, p.1). Olken & Pande similarly explain: "On the one hand, there has been a revolution in the measurement of corruption and this has, in turn, led to a blossoming of the academic literature on corruption. On the other hand, if we were asked by a politician seeking to make his or her country eligible for Millennium Challenge aid or the head of an anti-corruption agency what guidance the economic literature could give them about how to tackle the problem, we realized that, beyond a few core economic principles, we had more questions to pose than concrete answers."

[3] Think *e.g.* of a person getting a passport, or a qualified entrepreneur getting an operating license. These bribes escape some standard corruption definitions. Banerjee *et al.* (2012), *e.g*, define corruption as "the breaking of a rule by a bureaucrat (or an elected official) for private gain." With harassment bribes, the bureaucrat by contrast gets a bribe to *comply* with the rule (which to a degree is reminiscent of tips and forms of blackmail or extorsion, which is why this type of corruption is sometimes labelled "estortionary").

[4] "Who to Punish," May 5, 2011. See also Paul Seabright's piece in *Le Monde*, May 24, 2011.

discarded it mainly on moral grounds.[5] More tempered/thoughtful criticism has come from economists. Jean Drèze (2011), in particular, wrote a penetrating comment arguing that Basu does not give adequate attention to some institutional and moral concerns which may change conclusions.

Basu's intriguing and inspirational presentation is informal as is the heated debate it inspired. Perhaps one shouldn't expect the issues to be easily settled through such discourse? The proposal is reminiscent of somewhat analogous tools used in other fields, such as leniency policies in antitrust and whistleblower protection and reward schemes against fraud and organized crime. Scholars who studied those measures have suggested they may be very effective if well designed and administered, but counterproductive if details are not set right.[6] Deeper understanding of the pros & cons of subtle legal rules may require careful scrutiny within a formal model.

We develop a formal model and represent the scenarios Basu and his commentators care about as explicit games. By comparing equilibria we draw conclusions regarding which legal rules should work well in what setting. BP gets mixed, context-dependent grades and we highlight complementarities with other policies. Legalizing bribe paying while strenghtening sanctions for bribe taking works best if coupled with measures that increase the costs for bureaucrats of denying citizens what they deserve and reduce the costs for citizens of getting justice. Verifying whether and how large a bribe was paid entails costs which may deter reporting, hence BP tends to works better against larger bribes. Inefficient and corrupt law enforcement increase these costs, therefore BP will be more effective if works better if it is part of a wider reform package that also fosters independence and accountability of the legal system.

Taking into account the additional legal and moral considerations brought up by Drèze complicates the picture, but we propose a modified policy that escapes many of the objections. The idea is inspired by leniency rules in anti-trust. Rather than legalize bribe-giving, only those who report having paid a bribe are awarded legal immunity.

We then consider whether the tool can be used against more harmful corruption than harrasment bribes. We highlight a credibility problem linked to the negative externalities that more distortive corruption entails: after a briber blows the whistle, letting him keep the object of the corrupt deal (besides the bribe) may be politically unfeasible, hence not credible. However, we

[5] At times seemingly reflecting knee-jerk response rather than careful analysis; see *e.g.* P. Saniat's "Bribes: a small but radical idea" in *The Hindu* (April 21, 2011; p. 10), or listen to the commentary in the BBC World Debate broadcast (from the World Economic Forum in Mumbai) of "Can India Beat Corruption?" (1.05 PM, Nov. 19, 2011; check after 47 min.).

[6] See Spagnolo (2008) for an overview.

show that a monetary reward on top of the bribe may be an affordable solution to this problem as the reward must only match the briber's private valuation of the object, not the negative externalities it generates.

Section 2 introduces a stylized game with entrepreneur-civil servant interaction and harassment bribes in which the effects of BP can be evaluated for some benchmark settings. The complications brought to light by Drèze and our modified proposal are addressed in section 3. Section 4 discusses whether and how these tools could be adapted to fight more harmful forms of corruption. Section 5 contains a series of complementary observations and Section 5 concludes, summarizing the main policy implications.

2 A stylized model of harassment bribes

In this section we propose a stylized model of harassment bribes with all the assumptions implicit in Basu's note, including that for a briber the cost of demonstrating having paid a bribe are negligible. In the next sections we will replace some of these assumptions with possibly more realistic ones that emerged in the debate.

2.1 Preliminaries

The basic game

Consider the interaction between an entrepreneur (E) and a civil servant (S). The government has employed S trusting him with the task of issuing licences to people like E. However, it is within S's power to deny E this treatment. The bureaucrat may require a bribe to issue the licence and E may choose to indeed offer S a bribe. Giving and accepting bribes is illegal and subject to fines, but the practice is so widespread that there is practically no chance of being caught unless an involved party reports the corrupt exchange to law enforcers.

Even with benevolent law enforcers, a party reporting paying a bribe will face some cost C of proving that the claim is true.[7] We follow Basu by assuming that these costs are smaller than the bribe, and to simplify notation we set $C = 0$ (without further loss of generality).[8] We also

[7] These costs include, for example, the hassle of denouncing the illegal exchange and possibly testifying in court; arranging for additional witnesses; requiring a bank to record the banknotes used to bribe, or photographing them; ensuring that the exchange is wiretapped, etc.

[8] This assumption captures situations where the judiciary is substantially less corrupt than government bureau-

follow Basu by assuming that reporting to S's boss that a bribe was paid or that the licence was not being delivered would not be beneficial.[9]

After S has made it clear that a bribe needs to be paid to get the licence, the situation unfolds as described by the game in Figure 1[10]:

INSERT FIG 1 HERE!

At the root E either accepts offering a bribe (B) or not ($\rightharpoonup B$). In the latter case S responds by issuing a licence (L) or not doing so ($\rightharpoonup L$). If E offers a bribe, then S has three choices: not accepting the bribe & not issuing a licence ($\rightharpoonup A \rightharpoonup L$); not accepting the bribe & issuing a licence ($\rightharpoonup AL$); accepting the bribe & issuing the licence (AL).[11] If E chooses B and S responds with AL then the players simultaneously choose whether to report (R) or not ($\rightharpoonup R$) the exchange of the bribe. As regards the payoffs, b is the amount of the bribe, v the value to E of a licence, c the cost to S of issuing a licence, and F_E and F_S the fines to E and S if they are convicted for the corrupt exchanged because of a report.

We assume that $F_E, F_S > v > b > 0$ and that $b > |c|$ while c may be either positive or negative. $c > 0$ is relevant if S has an opportunity cost of not shirking, say filling in paperwork rather than doing some other activity that benefits him (possibly playing a computer game). $c < 0$ is relevant if denying E a licence implies risk that S is caught-in-the-act-and-fired. Of course, both

crats and politicians. In some countries this is not the case, however, therefore alternative assumptions will be considered in subsequent sections.

[9]The idea is that large part of the bureaucracy is corrupt, with S's bosses possibly sharing in the bribes, and that there may be many excuses for a delay in the delivery of a licence (in contrast to the clear illegality of a bribe payment). If reporting the harassment to S's boss could solve the problem, we would not observe bribes in the first place.

[10]There may be an initial stage where S chooses whether to require a bribe or not, in which case the game tree in Figure 1 follows S's choice of requiring a bribe. Alternatively, we could have a bargaining game between S and E before the first node in tree in Figure 1, followed by the game tree in Figure 1. For public offices, where other citizens/civil servants are present, none of these assumptions is particularly realistic. In these cases it is likely that E already knows (from the grapevine) that a bribe is expected in exchange for the license and how large it should be. Since our results are the same under these three assumptions on what happens before the first node in the figure, we refrain from specifying it saving on length and complexity.

[11]We assume that when the bribe is accepted E hands it over with one hand as he receives the licence in the other. Hence it is impossible for S to accept the bribe & not issue the licence. This marks a difference relative to Buccirossi & Spagnolo's (2006) analysis of illegal exchanges where decisions are not simultaneous and need an enforcement mechanism in their own right.

considerations may apply in any given situation, so c should be interpreted as reflecting their net effect.[12] Since the second consideration reflects ability to catch a shirking servant, we think of c as reflecting how well organized government is (a lower value implying better organization). We view $c < 0$ as the standard case but in extreme situations of poor state capacity the situation may be better captured by $c > 0$.

The assumption that $v > b > c$ is key for furnishing scope for corruption. How is b determined? We will not model that process, as most of our results do not depend on the exact level of b (as long as $v > b > c$). Some results (especially in Section 3) require b to take a more specific value, in which case we offer related comments. We will then assume that S has all the bargaining power in determining b, so that he can be viewed as unilaterally having set its level subject to relevant incentive-constraints. (This assumption makes sense especially if S, but not E, interacts repeatedly, which we shall consider our main focus.)

Welfare

What game outcomes would be good or bad from a society point of view? To appreciate our approach, note first that c is not a cost to care about for welfare purposes. Recall, S is hired with the understanding that he should issue a licence to people like E. It is implicit that S is adequately compensated and that the value to society of licensing is (much) higher than c. Hence, if S fails to issue a licence to E this is a bad outcome. Second, there may be welfare costs of bribes not reflected in the game's payoffs (as given). Why is there public debate about the (negative) effects of bribes and corruption even when they do not appear to distort allocations? The answer has to do with externalities. It may serve the public's interest, somehow, that people like E get a licence when they earnt it. That was our example above. Similarly, occurrence of bribes may be bad. Why? Perhaps if E has to bribe S to get his licence, then this undermines civic morale. Perhaps, for example, it increases E's propensity to cheat when filling out his tax return. We shall not attempt any exact quantification of the societal benefits and costs associated with licenses and bribes. Rather, we use two qualitative yardsticks:

– *To what degree are bribes deterred?*

– *To what degree are licences issued?*

[12] It seems unlikely that the two effects would cancel exactly, so we'll neglect the case of $c = 0$.

Predictions

In section 2.2 we look at the case where the game in Figure 1 is all there is to the interaction. In section 2.3 we then consider the arguably more natural extension where S plays the game repeatedly (the case where S and E are both repeated players is discussed in section 5). We treat the cases $c > 0$ and $c < 0$ separately, because the sign of c turns out to matter crucially to the solutions.

2.2 One-shot interaction

The case of $c > 0$

Once the reporting subgame is reached (see Figure 1) each player has a (weakly) dominant choice not to report. Assuming each player thus chooses $\rightharpoondown R$ there, the game possesses a unique associated subgame perfect equilibrium (SPE): S chooses AL following B; S chooses $\rightharpoondown L$ following $\rightharpoondown B$; the best response for E at the root is B. Compactly described, walking through informations sets from left to right, for each player, the strategy profile in question can be written as $((B, \rightharpoondown R), (\rightharpoondown L, AL, \rightharpoondown R))$. The outcome: *$E$ offers a bribe to S, who accepts it and issues a licence; no player reports the bribe.* Is this good or bad? That depends. A bribe is paid, which is bad. On the other hand, a licence is issued, which in our context is good.

Consider now BP: *Legalize bribe-giving, double the fine for bribe-taking, and make the bribe-taker pay back the bribe if discovered.* This policy leads to the game of Figure 2:[13]

INSERT FIG 2 HERE!

If dominant choices are made in the reporting subgame (R for E; $\rightharpoondown R$ for S), this game has two SPE. Compactly described, as before, they are: $((\rightharpoondown B, R), (\rightharpoondown L, \rightharpoondown A \rightharpoondown L, \rightharpoondown R))$ and $((B, R), (\rightharpoondown L, \rightharpoondown A \rightharpoondown L, \rightharpoondown R))$. E may or may not offer a bribe, but the outcome is the same: S does not accept any bribe & does not issue a license. The welfare implications are flipped relative to the previous case. On the one hand, bribes disappear. On the other hand, no licences are issued. When the government is so poorely organized that $c > 0$, BP is successful on corruption deterrence but reduces the number of licenses issued.

[13] We assume the bribe is taken away from the bureaucrat if he is discovered, as most legislations prescribe this independent of how the bribe taker is discovered. Results would not change if instead the bribe were taken away from the bureaucrat only when it must be paid back to a bribe payer, as implicit in Basu's formulation.

The case of $c < 0$

Back to Figure 1. Assuming that the dominant choices of $\rightharpoonup R$ are made, there is a unique associated SPE: $((\rightharpoonup B, \rightharpoonup R), (L, AL, \rightharpoonup R))$. E does not offer any bribe but S issues a licence anyway, a good outcome on all fronts.

BP is now redundant, as the SPE path is the same when we move to the game in Figure 2: E does not offer a bribe but S issues a licence anyway.[14]

The following proposition summarizes these results.

Proposition 1 *With costless reporting and one-shot interaction BP deters bribes and loses licenses when* $c > 0$ *and is redundant when* $c < 0$.

The appeal of this conclusion is questionable. We can think of many cases where harassment bribes are paid when $c < 0$, arguably the most empirically relevant parameter range ($c > 0$ refers to probably less common situations of more extreme bureaucratic inefficiency). What is missing from the picture? We believe the answer is that we have so far neglected important aspects that concern repeated play, and which change the conclusions. We show this in the next section.

2.3 Repeated interaction ('long-run S')

Civil servants who deliver licenses or perform analogous tasks are often around a long time. They may serve or harass many citizens/entrepreneurs, who are then likely to talk about the experience.[15] A more realistic setting to explore BP is therefore one in which S is a 'long-run' player who interacts over and again with new ('short-run') E's.

Assume the game analyzed in the previous section is played an infinite number of periods. In each period S interacts with a different E, who knows the history of play until then. Time is discrete and periods indexed by $t = 1, 2, 3...$ Let δ denote the intertemporal discount factor, with

[14] The overall solution changes off-path: The dominant choices in the reporting subgame are R for E and $\rightharpoonup R$ for S, so the game of Figure 2 has two associated subgame perfect equilibria: $((\rightharpoonup B, R), (L, \rightharpoonup AL, \rightharpoonup R))$ and $((B, R), (L, \rightharpoonup AL, \rightharpoonup R))$.

[15] Vannucci & Della Porta (2007) study conversations between corrupt parties recorded by the police when the large Italian corruption network (*Tangentopoli*) was discovered in the 90s. They note that corrupt public officials are careful in developing, spreading, and maintaining a reputation for being reliable corrupt officials, who accept bribes without reporting bribery attempts to the police, and who reciprocate bribes with good performance and otherwise hardly perform at all. (We are grateful to Elisabetta Iossa who brought V&DP's work to our attention.)

$0 < \delta < 1$. (As usual, discounting ensures that this captures situations in which the game is repeated a finite but uncertain number of times.)

In such a 'one-sided repeated game,' perpetual play (following any history) of the one-shot equilibrium discussed in the previous section corresponds to a SPE. However, while short-run players are bound to play according to their static best-response strategies, the threat of perpetual reversion to a stage game Nash equilibrium can credibly be used to sustain other equilibria where the long run player avoids her static best response (see Fudenberg, Kreps & Maskin 1990). We focus on equilibria with as much bribery as possible, and explore whether BP changes patterns.

Long-run S, $c > 0$

If the bureaucracy is so inefficient that $c > 0$, allowing S to be a long-run player does not make bribery any less supportable as a SPE than in section 2.1. Perpetual play of the equilibrium of the one-shot game (starting at any history) is a SPE of the one-sided repeated game.

What happens if BP is introduced? Since short-term players are not able to commit, each E has a dominant choice to report and get the bribe back. Therefore S accepts no bribe. As in the one-shot case, BP successfully deters corruption but has the drawback that no licenses are issued.

Long-run S, $c < 0$

As flagged for at the end of section 2.2, allowing for a long-lived civil servant has potentially dramatic effects when $c < 0$. Perpetual play of the equilibrium from the one-shot scenario, where E does not bribe and S delivers the licence, of course remains viable under repetition. However, since S is a long-run player, other equilibria emerge where S conditions his stage-game choices on whether or not he was offered a bribe. As long as S is sufficiently patient he may commit not to deliver the licence unless a bribe is paid. This behavior is sustainable as follows:

- S: *Accept the bribe and issue a licence if E offers a bribe. Do not issue a license if E does not offer a bribe.*
- Each E: *Offer the bribe if in the past S always issued a license every time a bribe was offered and did not issue a license every time no bribe was offered. Do not offer a bribe otherwise.*

This SPE involves an intriguing form of trigger-strategy combination, executed by the collection of short run E players: S issues a license iff he is bribed. This is sustained by the threat that if at any time a bribe were not offered and S still delivered a license then the 'live' short-run players,

from then on, would forever stop offering bribes and play would revert to perpetual repetition of the one-shot game equilibrium (with no bribes+licensing).

S will play his part as long as the following incentive constraint is satisfied:

$$-c \leq \frac{\delta}{1-\delta} b,$$

where $-c$ is S's short-run gain [note: $c < 0$ so $-c > 0$] from delivering a licence even if a bribe is not paid. On the right-hand-side we have the expected discounted loss of future payoffs caused by such a deviation.[16]

Suppose this equilibrium is relevant and consider the effect of BP. Since entrepreneurs are short term players, reporting is a dominant choice if a bribe is exchanged. So, the best S can do is to never accept a bribe but to always issue a license anyway. BP thus works very well, both in terms of corruption deterrence and of efficiency. It makes it impossible to sustain equilibria with bribes and rationing by undermining S's ability to commit to a conditional licensing strategy, re-establishing the unique efficient static equilibrium.

The following proposition summarizes these last results.

Proposition 2 *With costless reporting and S long-term player Basu's Policy deters bribes and reduces delivered licenses when $c > 0$; it deters bribes and increases delivered licenses when $c < 0$.*

We find this last case particularly plausible, possibly most relevant in reality, and closest to what Basu had in mind. We take it as the main benchmark to relate back to in the analysis to follow, although we also keep track of what happens if $c > 0$ or if S is not a long-run player.

3 Complicating the picture

In the games of section 2 the case for BP was rather positive. BP did very well, eliminating bribery and generating licences, in the more plausible scenario with $c < 0$ and long-run S. When instead the bureaucracy were so inefficient that $c > 0$, BP worked less well; it reduced bribes but also eliminated the delivery of licenses (independent of whether or not S was a long-run player).

The results relied on a set of simplifying assumptions implicit in Basu's informal piece. In the debate following the proposal several observers questioned some of these assumptions on the

[16] The per-period payoff of sticking to the equilibrium is $b - c$; the per-period payoff following a deviation is $-c$; the difference is $(b - c) - (-c) = b$, and the rhs records present value.

ground that they do not reflect the Indian reality. In particular, a thoughtful commentary by Drèze (2011) raised a number of subtle objections linked to the complexity of the institutional environment and to the possible moral and legal costs of bribing. In this section we reformulate these concerns as parameter changes and explore how conclusions change. Our findings lead us to propose a modification of BP that circumvents some of the problems.

3.1 Costs of reporting

In section 2 we assumed, as implicit in Basu's note, that the costs for E to report the corrupt exchange to law enforcement authorities and get back the bribe are negligible. However, it is clear that the costs of proving that a bribe of a given size was paid – including time lost denouncing/testifying, marking banknotes or wiretapping the exchange – may be significant. Moreover, in many situations where corruption is widespread among public servants, the law enforcement system is also inefficient or corrupt. As Drèze notes for India, a person who reports a bribe may then expect "huge litigation costs, possible harassment, and little chance of getting justice."

Consider the case of costly law enforcement, where E expects to bear substantial costs to have S convicted and get the bribe returned.[17] We assume that if E reports he expects litigation and further harassment costs $C > 0$, unless S also self-reports/confesses. If these changes are incorporated to the pre-BP game of Figure 1, predictions do not change. For the one-shot interaction, we get bribes+licenses when $c > 0$ and no bribes+no licenses when $c < 0$. For the one-sided repeated game with long-run S, we get the conclusions of section 2.3 with the stage-game as seen in Figure 1.

However, with BP in operation, some predictions are affected. Incorporating the mentioned parameters changes to the game in Figure 2 we get the game in Figure 3:

INSERT FIG 3 HERE!

If the cost of reporting is substantial when compared to the bribe, so that $C > b$, even after having paid a bribe and received the licence E has no incentive to report. For the one-shot interaction, deriving predictions as usual, we get bribes+licenses when $c > 0$ and no bribes+no licenses when $c < 0$. For the one-sided repeated game with long-run S, we get the same conclusions as we got in section 2.3 if the stage-game were that of Figure 1. In other words, reporting costs

[17] In section 4 we discuss the slightly different case of *corrupt* law enforcement.

larger than the bribe will undo the effects that would otherwise result from BP.

A twist to these conclusions should be noted. Assume that S has all the bargaining power in determining b (as seems especially natural in the one-sided repeated game scenario). Before BP, in an equilibrium with bribery, we would expect $b = v - \epsilon$ where ϵ is the minimum that S needs to leave for E to make him willing to offer a bribe in exchange for a licence. Now suppose that C is moderate: $0 < C < v - \epsilon$. Does this mean that Drèze's critique does not apply? Not quite. S may still be able to ensure that $C > b > 0$ by choosing b such that $0 < b < C < v - \epsilon$, thus reinstituting an equilibrium with bribery. In this case, BP would not be ineffective. Rather than eliminating bribes, it would lead to a reduction in the size of the bribe sustainable in equilibrium.[18]

The following proposition summarizes these conclusions.

Proposition 3 *When reporting costs are larger than the bribe ($C > b$) BP is ineffective. When reporting costs are significant but smaller than the value of the licence ($0 < C < v - \epsilon$) BP may not deter bribes but may reduce their size to satisfy $b < C < v - \epsilon$.*

This suggests that BP is not indicated to fight small scale, petty corruption. It should work better against larger bribes, as these provide a stronger incentive for E to incur the reporting costs C in order to get back the bribe.

Is there any policy that could help complement BP, to overcome the problems caused by a large C? One possibility would seem to be to offer a reward, over and above bribe restitution, to effectively reduce C and induce bribe-givers to report. The high costs of legal action and of harassment from employers born by whistleblowers is precisely the reason why several whistleblower incentive programs implemented in the US reward information with hefty monetary rewards. But again, this might not work to fight the small bribes typical of petty corruption. The rewards and administrative costs of the program may be large before any deterrence effect materializes, which have to be financed by tax-payers. This might generate further outrage as well as incentives for information fabrication and attempts to capture/blackmail otherwise innocent bureaucrats. Therefore, if reporting costs C are sizable relative to the targeted bribes, policies directly aimed at increasing the efficiency of law enforcement institutions appear to be an essential pre-requisite for BP to have beneficial effects.

[18] If the discount factor is binding in the long-run S case, we would expect the bribe to be set at the highest level satisfying S's incentive constraint with equality: $-c\frac{1-\delta}{\delta} = \overline{b}$. An intermediate level of $C < \overline{b}$ may then sustain a corrupt equilibrium even with BP in place, but with the bribe reduced to satisfy $0 < b < C < \overline{b}$.

3.2 The moral & legal costs of bribing & not reporting

Until now we assumed that, apart from b itself, there were no costs associated with paying a bribe (unless, of course, someone reported it). Drèze points out two reasons why this may lead to incorrect conclusions. First, there could be a positive probability of being detected and convicted even without a report. Second, some people may suffer a moral cost when they illegally bribe.[19] In these cases, Drèze argues, legalizing bribe-giving may even *increase* corruption. This is because E, who otherwise would offer no bribe, may now do so while planning on not reporting. Why? Drèze refers again to the litigation costs C discussed in section 3.1.

To explore these aspects within our setting,[20] let $0 < \alpha < 1$ be the probability of conviction if no party reports the bribe,[21] $M > 0$ the moral cost of illegal bribe-giving, and C the expected cost of reporting and getting back the bribe (as before). Without BP, we get the game in Figure 4:

INSERT FIG 4 HERE!

With BP, paying a bribe is no longer illegal for E, so $F_E = 0$. Moreover, it would arguably no longer be morally reprehensible to bribe, so $M = 0$.[22] Finally, as in Figure 2, we assume that E gets back the bribe if he reports. The game of Figure 4 changes into that of Figure 5:

INSERT FIG 5 HERE!

[19] An alternative hypothesis not considered by Drèze is that people feel outraged when forced to pay an illegal bribe for a service they should be entitled to, incurring an "outrage cost" M. Legalizing bribe paying may then reduce the "outrage cost" and lead fewer people to resist bribe-paying.

[20] While we discuss the effects of BP in the presence of moral concerns we refrain from commenting on the morality of the proposal itself, which appears very subjective. For example, some Indian commentators regard it as 'fair' to consider harassment bribe-payers as victims of bureaucrats (see e.g. *Business News*, April 23, 2011). Drèze, by contrast, dislikes BP because it relies on "bribe-givers being doubly corrupt: by giving a bribe, and by stabbing bribe-takers in the back as they blow the whistle." Judging negatively the act of turning in a fellow wrongdoer is common but not necessarily well grounded in ethics. It attributes the same positive value to legal and criminal cooperation, and the same negative value to betraying fellow citizens and mafia members. It is one of the reasons – together with violent revenge – why in some cultures it is difficult to find witnesses against criminal organizations.

[21] If an outside party (a policeman) detects bribery without reports, could he be bribed to turn a blind eye? If so, might he get discovered, and face a similar situation "from the other side"? Basu, Bahattacharya & Mishra (1992) explore such concerns, which we abstract from (taking α to be given) . Basu *et al* do not, however, let bribery parties self-report which implies (cf. their footnote 4) that it is irrelevant whether bribe-giving is illegal.

[22] We favor Drèze (and crispness) here; arguments could be made that moral costs remain positive with BP.

One-shot interaction

Without BP (Figure 4), no one reports, but if α and M are high enough then E does not wish to reach the reporting subgame regardless. We get no bribe+no license when $c > 0$ and no bribes+license when $c < 0$ – the same paths as with BP before, but now without BP. After introducing BP (Figure 5), when $c > 0$ we move to a bribe+license equilibrium, so that corruption increases with licenses but *only if* $C \geq b$. When $b > C$ BP induces E to report and the no bribe+no license outcome persists.

When $c < 0$ there is no change (no bribe+license).

Long-run S; $c > 0$

Without BP (Figure 4), E's participation constraint (to play a bribe+licence equilibrium) will be satisfied if $v - b - \epsilon - M - \alpha F_E \geq 0$, while S's participation constraint is satified if $b - c - \alpha(b + F_S) \geq 0$. Corruption is therefore viable only if the joint participation constraint

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon - M - \alpha F_E$$

is satisfied; this cannot hold for sufficiently high M, α, F_E, F_S, or c.

With BP (Figure 5), the range of bribes satisfying the joint participation constraint widens:

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon.$$

It is thus possible that the pre-BP joint participation constraint cannot be satisfied while the new one can, a scenario which would seem to pave the way for Drèze's conclusion. However, to get the full picture one has to take into account that, with BP, if the bribe is too high then E would report and S would hence not accept the bribe. Put differently, as seen via Figure 5, E will report when $v - C > v - b$, or $b > C$. To rule this out, the following incentive constraint must hold: $b \leq C$, or say $b \leq C - \epsilon$ to break a tie. Summing up, Drèze's objection – that legalizing bribe giving makes people who previously did not bribe now do so – is valid only if the following inequalities all hold:

$$(c + \alpha F_S)/(1 - \alpha) > v - \epsilon - M - \alpha F_E,$$

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon,$$

$$b \leq C - \epsilon.$$

Note also the following related observation. Suppose that $(c+\alpha F_S)/(1-\alpha) \leq v-\epsilon-M-\alpha F_E$; the pre-BP joint participation constraint holds. In this case, equilibrium bribery is possible before and after the introduction of BP, but the size of the bribes may differ. Sticking to the assumption that S holds all the bargaining power, taking account of the stated inequalities, we get $b^{PRE} = v - \epsilon - M - \alpha F_E$ as the pre-BP bribe and $b^{POST} = \min\{C - \epsilon,\ v - \epsilon\}$ as the bribe with BP implemented. Hence, we get $b^{PRE} < b^{POST}$ if $v - M - \alpha F < C$, and vice versa. In words: if C is high enough, the bribe size increases with the introduction of BP; if C is lower, BP instead decreases the bribe size, and deters corruption altogether when $C \leq (c + \alpha F_S)/(1 - \alpha)$.[23]

Long-run S, $c < 0$

Without BP (Figure 4), as in Section 2, a bribe+licence equilibrium is sustainable using trigger-strategies. The same joint participation constraint applies as above:

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon - M - \alpha F_E.$$

To rule out that S delivers a licence without a bribe the following incentive constraint must hold:[24]

$$-c \leq \frac{\delta}{1-\delta}(b - \alpha(b + F_s)).$$

Now introduce BP (Figure 5). By setting $M, F_E = 0$ the range of bribes satisfying the relevant joint participation constraints widens:

$$(c + \alpha F_S)/(1 - \alpha) \leq b \leq v - \epsilon.$$

S's incentive constraint remains as pre-BP, but for E we have to add (as in the $c > 0$ case)

$$b \leq C - \epsilon.$$

The overall conclusions (regarding parameter regions under which Drèze's objection goes through or bribe sizes increase with BP) are analogous to those for the $c > 0$ case above. When reporting

[23] Similar bribe size remarks apply to the one-shot case, but seems less relevant as the idea that S has all the bargaining power makes more sense if S is a long-run player.

[24] The lhs is S's short-run gain. The rhs is the present value of long run loss: the per-period payoff of sticking to the equilibrium is $b-c-\alpha(b+F_s)$, the per-period payoff following a deviation is $-c$, so the difference is $b-\alpha(b+F_s)$.

costs C are large, the size of the equilibrium bribe will increase with BP; if C is low, BP decreases the bribe size, and deters corruption when $C \leq c + \alpha F_S$.

The following proposition summarizes these last findings.

Proposition 4 *With positive moral and legal costs of bribing BP may increase the frequency of corruption if reporting costs C are large, in which case it may also increase the size of the bribes. With low reporting costs BP either reduces the size of the bribe or deters corruption all together.*

Two additional points can be brought home. First, Drèze's concerns about moral & legal costs of bribing do not bite *per se*. As implied by E's incentive constraint $b \leq C - \epsilon$, it is necessary that BP – due to sufficiently high reporting costs – would not be effective in deterring corruption even if moral and legal costs were irrelevant. Second, bribes tend to be regressive. Imagine that individuals differ in their value of C, and that S is experienced and gauges his co-player's C correctly and adjusts b. Individuals facing higher costs of reporting – most likely weaker, poorer persons unable to defend themself from police harrassment – would be asked to pay higher bribes (up to the constraints given above). This is probably a common aspect of corruption, but it emerges quite naturally in our simple set up.

3.3 A slightly modified proposal

Here is a new policy which is similar to BP, yet to a degree immune to the problems highlighted in section 3.2. We exploit an idea from leniency laws in anti-trust under which participating in a cartel is not legal although immunity from fines is assured to whoever first reports the activity. We propose to grant E similar immunity if he reports having paid a bribe.

Apply that idea to the game in Figure 4. That is, if E chooses R then, in the corresponding row, remove b and F_E. Make no change concerning M and α; bribing is still illegal and hence presumably morally costly, and on not reporting E is still caught and fined with probability α. We get the game in Figure 6:

INSERT FIG 6 HERE!

Drèze's concerns about moral costs and exogenous probability of conviction now lose relevance. To see this, consider the analogs of the participation and incentive constraints discussed in section 3.2. For S, no payoffs change, so no constraints change. For E, recall first his bribery-equilibrium

participations constraint for the game of Figure 4: $c + \alpha F_S \leq b \leq v - \epsilon - M - \alpha F_E$. Analogous reasoning as before makes it clear that this constraint does not change when considering instead Figure 6, so it is impossible that the pre-leniency joint participation constraint cannot be satisfied while the new one can. Next consider E's incentive to report; as seen via Figure 6, he will do this when $v - C - M > v - b - M - \alpha F_E$, or $b + \alpha F_E > C$. Hence the relevant incentive constraint (to not report) is: $b \leq C - \alpha F_E$, or say $b \leq C - \alpha F_E - \epsilon$ to break a tie. The analogous constraint from section 3.2 was $b \leq C - \epsilon$, so the new constraint implies the old one. All in all, unlike BP, the leniency policy shrinks the set of parameter constellations under which a bribe+license equilibrium is sustainable. To emphasize:

Proposition 5 *A modified version of BP such that amnesty (and bribe restitution) is conditional on reporting, prevents corruption from increasing because of the moral and legal costs of bribing (when C is large).*

There is, however, one possible concern that must be noted regarding this modified proposal. Because bribe paying is not made legal, an enterpreneur who reports having paid a bribe will be a "guilty wrongdoer" when he enters the police station to report. By contrast, under BP, he would be an innocent citizen. One may imagine that our leniency proposal enhances the scope to be harassed by the police. That is, with leniency C may increase relative to BP. So while softening Drèze's concerns about moral & legal costs, leniency may worsen his concern about inefficient law enforcement. That said, one should also take into account that our scheme provides stronger incentives to report relative to BP, as a reporter gains immunity from fines besides getting back the bribe. This may well over-compensate for an increase in reporting costs if sanctions are robust.

4 More harmful forms of corruption

Basu carefully circumscribed his proposal to harassment bribes. These may seem relatively innocuous in comparison to other forms of corruption that distort allocations of important assets and contracts and which may hurt third parties.[25] Moreover, distinguishing an harassment bribe from, say, a bribe to jump in front of a line (to get something one is otherwise entitled to) may be difficult in practice. It is therefore natural to wonder how extensions of BP, or our leniency

[25] Some countries have different names for harassment bribes and more harmful forms of corruption. See *e.g.* Bhardan (1997).

modification, would fare in regards to corruption more broadly. We initially planned to leave this issue for future research, but with the above analysis in hand, we had an intriguing insight we now wish to highlight.

As a background, let us abstract from the complications of section 3 and summarize the results of the basic model of section 2 in a table describing the welfare effects of BP:

	$c>0$		$c<0$	
One shot game	**+deterrence**	−efficiency	**irrelevant**	irrelevant
Long-run S	**+deterrence**	−efficiency	**+deterrence**	+efficiency

Columns 2 and 3 describe the effects of BP when $c>0$ (bad institutions): they are positive as regards deterring corruption (indicated by "+") but inefficiently interrupt the provision of public service (indicated by "−"). Columns 4 and 5 report BP's effects when $c<0$ (good institution), extremely positive in the most plausible case in which S plays repeatedly.

How do these conclusions change if instead of harassment bribes one considers situations with bribes for an illegal licence? To get at that, one must first consider: How do the games of sections 2 change in the new situation? The answer is: not at all! The payoffs for players E and S arguably remain exactly as indicated, so all implications regarding strategic play remain unchanged.

The only aspect of the analysis that changes is that whereas before we argued licenses are good (from society's point-of-view) we now have to assume they are bad. We can thus examine whether BP does well or badly using the above table, except we must switch efficiency's signs:

	$c>0$		$c<0$	
One shot game	**+deterrence**	+efficiency	**irrelevant**	irrelevant
Long-run S	**+deterrence**	+efficiency	**+deterrence**	−efficiency

Actually, we are not done yet. If we maintain the assumption that S is hired to perform legal acts, then the $c<0$ column must be irrelevant. To see this, note that whereas before S was hired to issue licences that people deserved, in the new situation the service performed in exchange for a bribe is illegal. So, S must have been hired to do something else. If he nevertheless accepts a bribe and issues a licence then the two factors affecting c discussed in section 2 (opportunity cost of not shirking and risk of being caught-in-the-act-and-fired) point in the same direction; both serve to ensure that $c>0$. Hence, we can drop the two rightmost columns, and get:

One shot game	**+deterrence**	**+efficiency**
Long-run S	**+deterrence**	**+efficiency**

At first glance, this table seems to reflect a success story. To summarize: BP was introduced solely with an aim on harassment bribes, and our analysis indicates that its benefits may be a mixed bag. When we shift attention to the case of non-harassment bribes, the effect of BP becomes clearer and unambiguously good: bribes are eliminated, and no illegal services are performed.

However, this conclusion comes with a serious caveat (in addition to those discussed in section 3). Consider the event that a bribe is given, that the illegal licence is awarded, and that E reports to the government. We have implicitly assumed that in such a case E gets to keep the licence. This is a strong assumption. The policy maker must be ready, in principle, to not revoke illegally awarded licences which license holders report that they have acquired illegally.

The game theorist in us objects that this does not matter; along the equilibrium path no licences are ever awarded. But the practical economist in us feels troubled. Consider an illegal licence that would very seriously hurt third parties. For example, assume that a technically unfit entrepreneur is granted a state-sanctioned monopoly on the control and sale of water. Or let the licence concern the right to convert Grand Canyon into a driving range. Would it be ethically and politically defensible to sanction such arrangements, even counterfactually? Of course not.

The problem, however, can be solved with a further modification of the incentive scheme. In the cases of distortive forms of corruption monetary rewards must be introduced to complement the scheme and compensate entrepreneurs that report having paid the bribe for the additional loss of the valuable albeit distortive licence. Note that rewards need only compensate for the private value of the lost illegal licence v, which are typically much smaller than the social harm H produced by distortionary corruption. Consider, for example, procurement of public works. Unsound construction firms often bribe to obtain contracts to build schools, bridges, hospitals (and then bribe again so that the low quality work is not discovered). If the briber that reports having paid the bribe loses the contract he loses the expected profits from executing that contract v. If the contract is then re-allocated to a sound contractor, the public gain is the huge social cost avoided by not having poorly constructed schools, bridges and hospitals, H. It is then optimal ex post to pay a reward of value up to $H - v$ to avoid the distortions even if we disregard the potential ex ante deterrence effects on future corruption.

The following proposition can be seen as our main result.

Proposition 6 *If monetary rewards can be used to compensate for the loss of the licence/contract after reporting having paid a bribe, the modified BP will be more effective against distortionary forms of corruption than against harassment bribes.*

As mentioned earlier, monetary rewards are not a theoretical curiosity. They have been used for a very long time to compensate whistleblowers for the very large costs these typical incur when reporting information under the US the False Claim Act (a law original introduced by President Lincoln to fight corruption in military procurement during the civil war!), and have recently been introduced in other fields of law enforcement.[26]

5 Alternative assumptions and extensions

In this section we collect a series of observations and extensions which would have hampered flow had we included it earlier. We discuss law enforcers' corruption; situations where both parties are long term players; legalizing bribe taking; and finally how to perform empirical tests related to the legal tools discussed in this paper.

5.1 Corrupt law enforcement

In section 3.1 we discussed the effects of exogenous law enforcement costs (C) for agents that report having paid a bribe. Here we compare those results to what would happen if instead there were *corrupt* law enforcement. Assume that after the reporting stage, but before law enforcers establish whether or not corruption occurred, the parties can offer new bribes to affect the verdict. E can offer a new bribe $b_E^* \geq 0$ to law enforcers to convict S and get back the original bribe; S can offer a bribe $b_S^* \geq 0$ to have the law enforcers falsely declare that there was not corruption. Suppose that this bribing competition takes the form of an English auction, and that law enforcers have some cost-of-lying denoted by π (possibly because there is some small chance they will be indicted). Then S will win the competition and be declared innocent if he is willing to pay more than π in addition to the highest bribe that E is otherwise willing to offer; S is then convicted and E obtains the original bribe b back (but of course not the new bribe b_E^*).

[26] Monetary rewards were adopted in 2008 by the US Internal Revenue Service to fight tax evasion, and introduced in 2011 in the Dodd-Frank Act to fight financial fraud. As mentioned before, the administrative costs of monetary rewards may be sizable (even if theoretically no reward should ever be paid in equilibrium if the scheme is well designed, staff needs be trained and allocated in case somebody reports to make the policy credible). To limit administration costs, all these programs establish a minimum size of the infringement below which they do not apply. This suggests that these schemes are better suited to fight the few large bribes of "grand corruption" than the small frequent bribes of "petty corruption".

Assume that at this bribing competition stage any preceding cost of reporting (C) is sunk and does not reduce E's willingness to pay (our conclusions would be strengthened otherwise). E will be willing to pay up to the original bribe b to have it back after a conviction of S. On the other hand, in case of conviction S will have to return the bribe b and pay the increased fine $2F_S$, hence his willingness to pay will be up to $2F_S + b$. As long as $2F_S + b > b + \pi$, i.e. as long as $2F_S > \pi$ the bribe competition will be won by S who will not be convicted; the opposite happens when $2F_S < \pi$.

Corruption of law enforcers tends to be more harmful to the functioning of BP and its variations than an exogenous enforcement costs C. The sanctions for accepting harassment bribes ($2F_S$) need to be large to deter bribe taking in the first place. But if $2F_S$ is larger than the cost π law enforcers incur in lying, S will win the bribing game and E thus not report to start with.

5.2 Long-run S, long-run E

One may conceive of situations where both E and S are long-run players, effectively playing a repeated game. For example, short-term E's may be represented by an long-run intermediary, licences may need to be regularly renewed, or the long-run S may be in charge of several different services needed by a long-run E. What would happen if also E is a long-run player?

Clearly the usual folk theorem kicks in, so that if discount rates are large enough 'anything can happen' (irrespective of c). In this sense, BP would loose its teeth in terms of deterrence. Fighting corrupt exchanges between two patient long-run players may likely require more powerful incentives/policy instruments.

This is not to say that BP would be irrelevant. If bilateral repetition prevents BP from deterring bribery, then Drèze's concerns about moral & legal costs will apply. Since corruption is not deterred but bribe-paying made legal, entrepreneurs that were not paying bribes before BP was introduced (because they find doing so immoral, or too risky) may now decide to pay bribes.

As discussed in section 3.3., these potential drawbacks can be avoided by modifying BP, turning into a leniency policy; bribe payers obtain amnesty and get their bribe back only if they self-report. This conditional amnesty does not legalize bribe paying, so Drèze's concerns about moral costs and the risk of being convicted without any report do not apply.

5.3 Legalizing bribe taking

What about the reverse of BP, where bribe taking is legal (like tips) while sanctions against bribe paying are doubled? While most of our qualitative conclusions would apply to this alternative scheme, bribe-takers would have less incentives to report than bribers because they don't have a bribe to recover, so this scheme would be relatively less effective.

For the same reason, a scheme open to both briber and bribee where immunity is awarded to the first party to report would mainly bite on the side of the briber (unless there are other factors strengthening the bribee's incentive to report, like higher expected sanctions).[27]

5.4 Empirical tests

The issue of evaluating BP is not entirely hypothetical, as analogous provisions have been in place in several European countries, and in particular in China since 1997. However, based on archival data, there is hardly any conclusive empirical evidence regarding their effects.[28]

A promising approach may be to run experiments. The last decade saw a burst of interest experimental studies of aspects of corruption; see Abbink & Serra (2012) for a survey. A recent intriguing laboratory study by Abbink, Dasgupta, Gangadharan & Jain (2012) evaluates BP and shows it may reduce corruption, but retaliation by bribe-takers can hamper the effect. Abbink *et al*'s design is not tailored to test our theory (in particular, they have no counterpart to our c). However, their finding about retaliation suggest that the issues surrounding C in our theory (cf. section 3) are a real worry. Inclination by S to retaliate would be one reason for C to be high.

Apropos the leniency policy we advocated (section 3.3), it is worth noting that theoretically appealing properties is not its only advantage. There is also some empirical evidence about the effectiveness (and drawbacks) of leniency policies in other contexts.[29]

[27] On the other hand, the possibility that the other party reports may reduce trust between corrupt partners and strengthen the effectiveness of the reporting scheme. Spagnolo (2004) develops theoretical arguments in this direction for price-fixing cartels and Bigoni *et al.* (2012b) offer experimental evidence consistent with them.

[28] A *Financial Times* blog post by Xingxing Li (10:50 am, May 1, 2012) argues the Chinese policy worked poorly; however, to draw that conclusion with confidence one needs a counterfactual, which seems lacking. Link:

http://blogs.ft.com/beyond-brics/2012/05/01/guest-post-bribery-and-the-limits-of-game-theory-the-lessons-from-china/#)

[29] See Miller (2009) for market-data regarding cartels, and Apesteguia, Dufwenberg & Selten (2007), Hinloopen & Soetevent (2008), and Bigoni, Fridolfsson, LeCoq & Spagnolo (2012) for experimental evidence. For suggestive evidence of success against mafia-related crime, see Acconcia, Immordino, Piccolo & Rey (2009).

6 Conclusions: policy implications

We now recall our findings and discuss what to take away as regards policy advice.

- Basu's policy (=BP) may not be effective against small harrassment bribes because the cost of proving that a certain bribe was paid may deter subjects from reporting. But it can be highly effective against sizable harassment bribes if the quality of the institutions is sufficiently high. BP is likely to have better deterrence effects in environments with pressure on bureaucrats to perform independent of bribes ($c < 0$) and where little prevents citizens from reporting having paid a bribe when they are not liable (C small). The proposal may instead have counterproductive side-effects in weaker institutional environments with little pressure on bureaucrats to perform apart from bribes ($c > 0$) and where individuals would likely not report having paid a bribe, e.g. because of high expected harassment costs ($C > 0$) from the police or from future interaction with the corrupt bureaucrat (if he is not replaced).

- Some of the possible negative side effects can be avoided by adopting a modified version of BP, inspired by leniency policies successfully used in other areas of law enforcement. The briber gets immunity from fines only if he reports having paid the bribe, so it is still illegal to pay bribes and if a briber does not report he remains at risk of being caught and fined.

- There are strong policy complementarities. The pressure to perform on bureaucrats (c), the expected cost/outcome of reporting having paid a bribe (C), and the level of corruption among law enforcers (π) are crucial determinants of the functioning of the reporting schemes and can be affected by appropriate policies. Rather than giving up the possible large gains from say a leniency policy (well known from other areas where it was employed), the policy could be accompanied or preceded by complementary measures directed at (i) improving the efficiency of the public bureaucracy, and (ii) ensuring that a reliable, trusted law enforcement channel is present that collects and fairly processes reports from bribe payers rather than harasses them. Such coordinated reforms have been implemented before, with the creation of small agencies/specialized task forces with the exclusive mission of facilitating collection of whistleblowers' reports while protecting their anonymity.

- If designed with care and combined with monetary rewards, these revelation schemes can be even more effective against distortionary forms of corruption than against harassment bribes, and in particular, against forms of "grand corruption" involving large bribes.

- The results highlight the central relevance of law enforcement institutions, as well as the importance of fighting corruption of these institutions more than their inefficiency. If planning an anti-corruption campaign, one should start from cleaning up corruption from law enforcement institutions (police & courts), all the rest comes second.

- There is no single recipe valid for all seasons. In countries with strong moral norms and well functioning law enforcement institutions, where corruption is not pervasive, leniency conditional on reporting is probably a policy likely to have strong corruption deterrence effects. In weaker institutional environments, where law enforcement institutions are less efficient, corruption is more widespread, and moral norms are weak, legalizing bribe paying may be beneficial only if preceeded by the needed complementary reforms. A specific assesment of the particular situation is always necessary to design policies effectively.

Even if institutions are initially very weak (in the sense that $c > 0$ or that C is large) one may imagine policies which could complement BP, or similar schemes, and render them more useful.[30] The general point is that fighting corruption in countries with weak institutions is likely to require a set of complementary policies that accompany revelation schemes like BP or our leniency-based variation, measures aimed at improving civil service performance and the accountability of law enforcement institutions.

It is interesting to note that several recent proposals have been made that illustrate the feasibility of such policies with potential to move c or C. Consider, for example, the following customer satisfaction feedback system recently implemented in the Jhang district of Punjab, as described in *The Economist* (Sept 24, 2009):[31]

> Zubair Bhatti, a Pakistani bureaucrat, asked all clerks in the Jhang district who handled land transfers to submit a daily list of transactions, giving the amount paid and the mobile-phone numbers of the buyer and the seller. He explained that he would be calling buyers and sellers at random to find out whether they had been asked to pay any extra bribes or commissions. When charges were subsequently brought against a

[30] This is in the spirit of Mookherjee & Png (1995). They analyze an inspection-corruption game and show that if government can use other instruments to induce inspectors to perform (stricter monitoring, higher efficiency wages, tougher sanctions) and has an unlimited budget, then one can find an equilibrium without bribes that welfare-dominates one with. In such a world, BP would increase welfare by facilitating corruption deterrence.

[31] We thank Husnain Ahmad for alerting us to the Jhang model. Read more about it here: punjabmodel.gov.pk

> clerk who had asked for a bribe, the others realised that Mr Bhatti meant business, and buyers and sellers reported a sudden improvement in service. Mr Bhatti extended the scheme to other areas, such as cracking down on vets who demanded bribes from farmers, and has proposed that the Jhang model [...] be adopted in other districts.

The scheme may reduce c (customer satisfaction information is used to sharpen bureaucrats' incentives) and C (can become a special protected channel for whistleblowing). Another example is Björkman & Svensson's (2009) field experiment documenting positive effects of village meetings on health service provision; this transparency/disclosure policy arguably reduced c.

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FIGURE 1: STANDARD LAW ENFORCEMENT

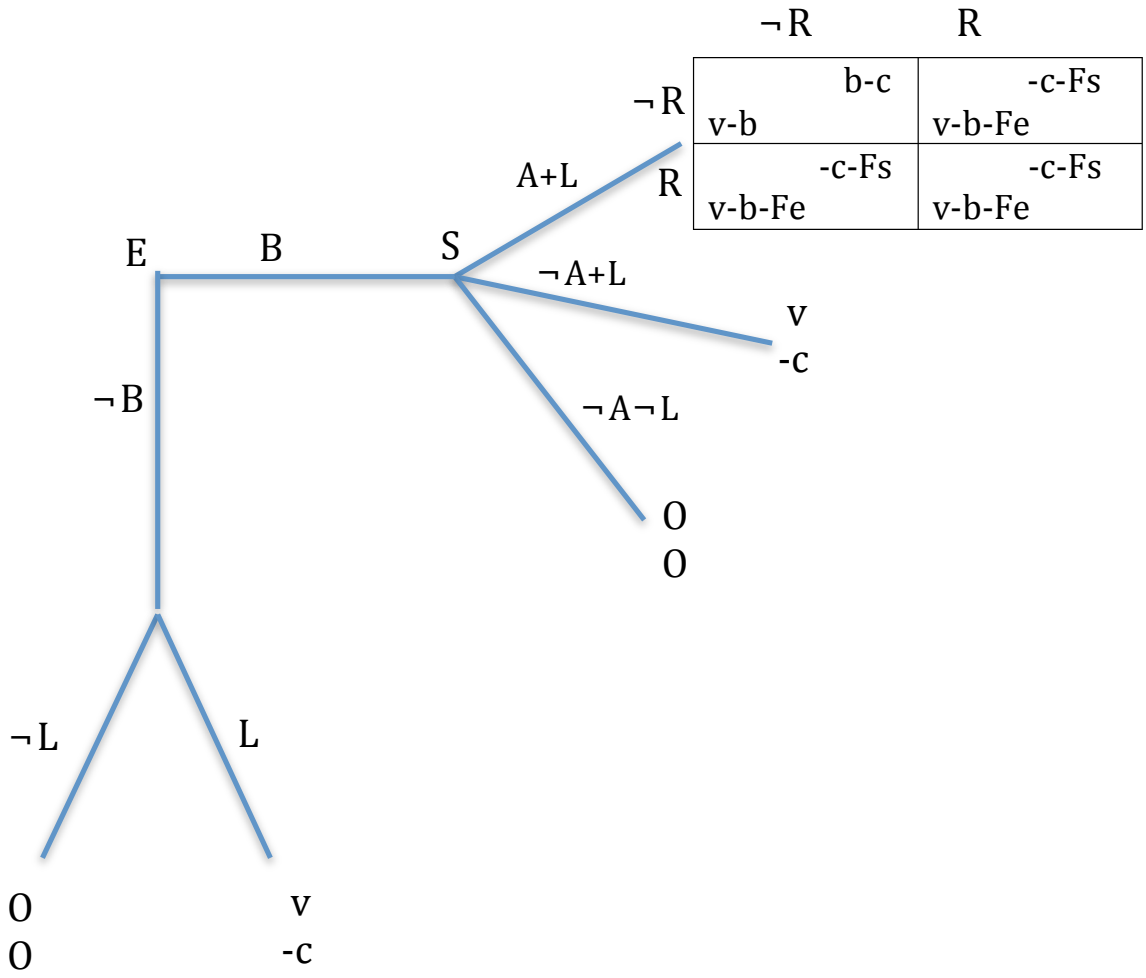

FIGURE 2: BASU PROPOSAL

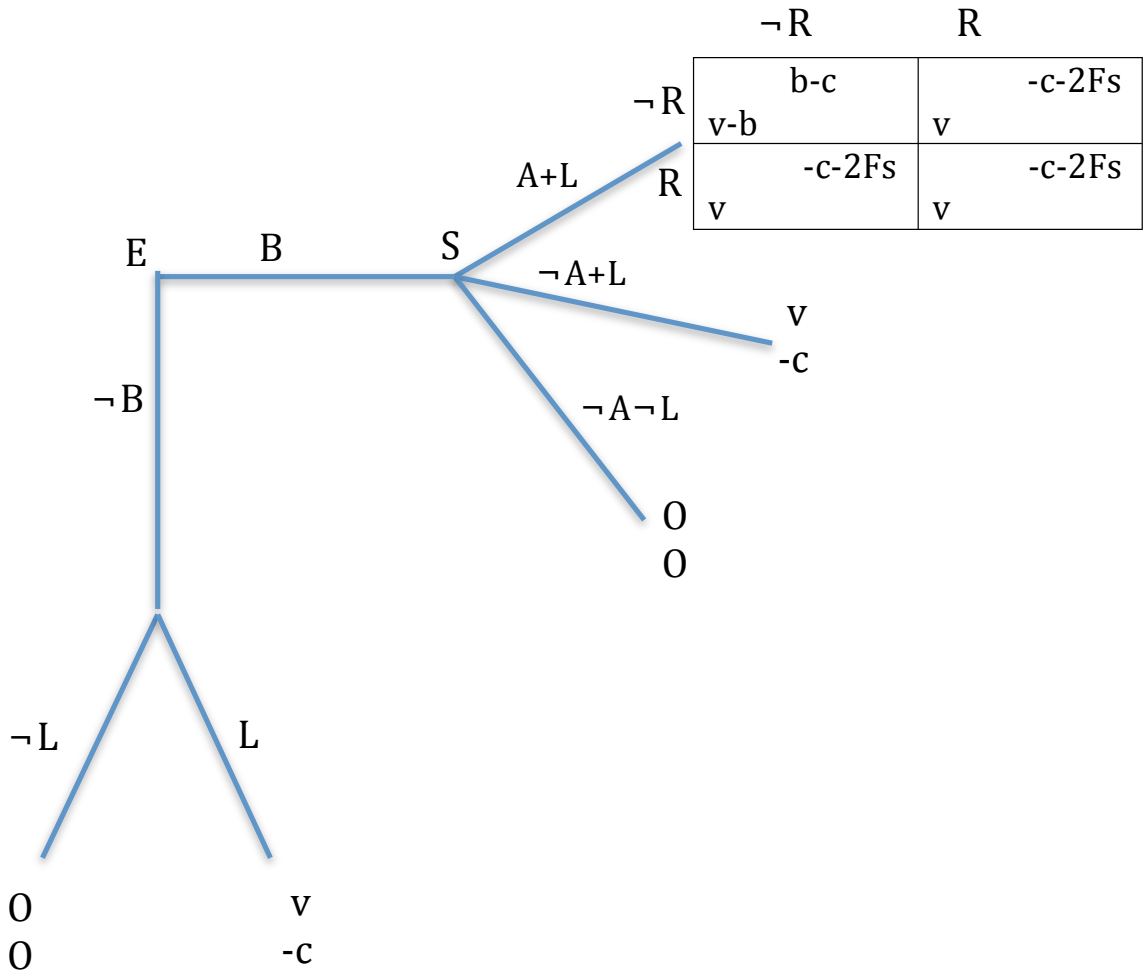

FIGURE 3: BASU + COSTLY LAW ENFORCEMENT

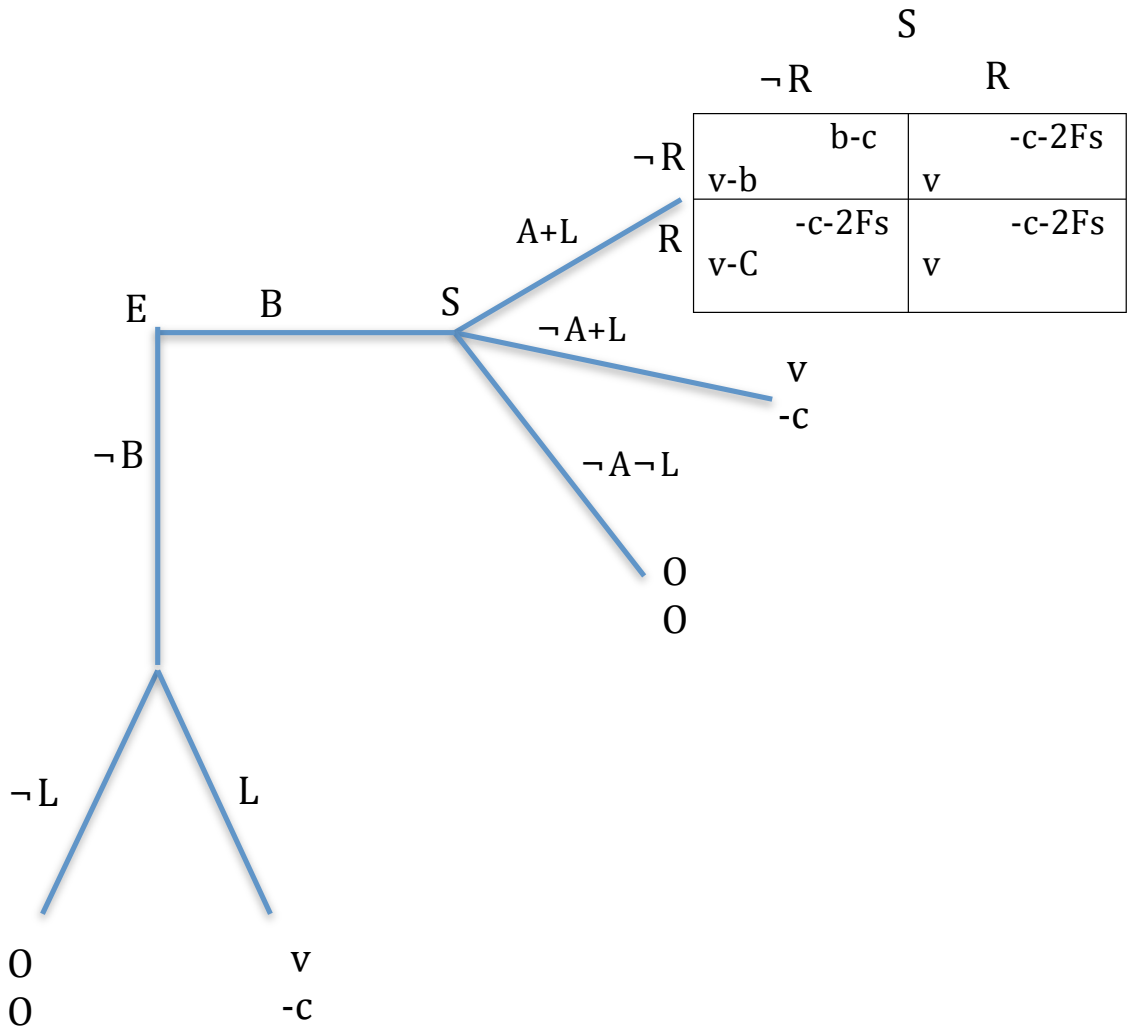

FIGURE 4: MORAL COSTS + EXOGENOUS CONVICTION

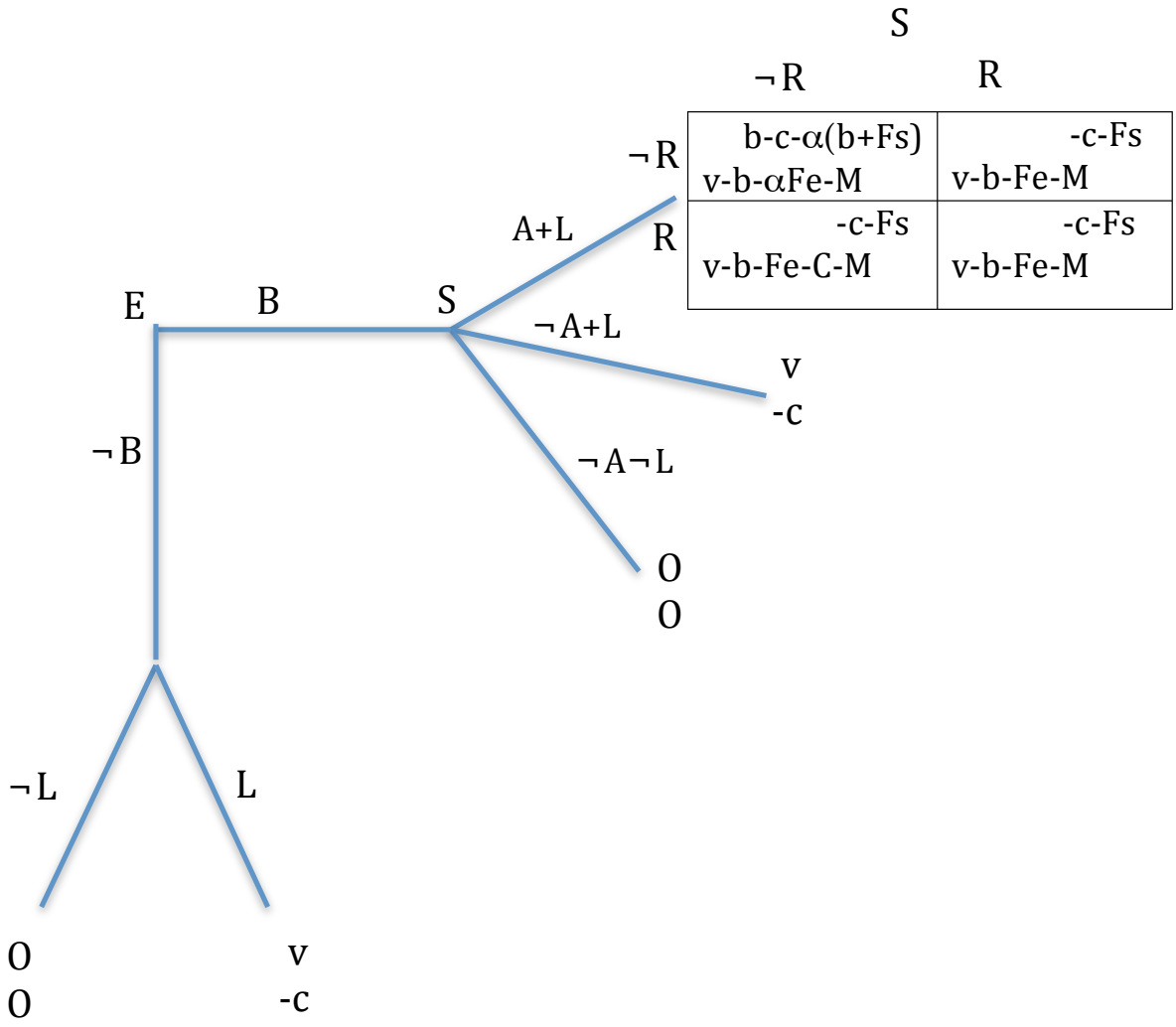

FIGURE 5: BASU + MORAL COSTS + EXOGENOUS CONVICTION

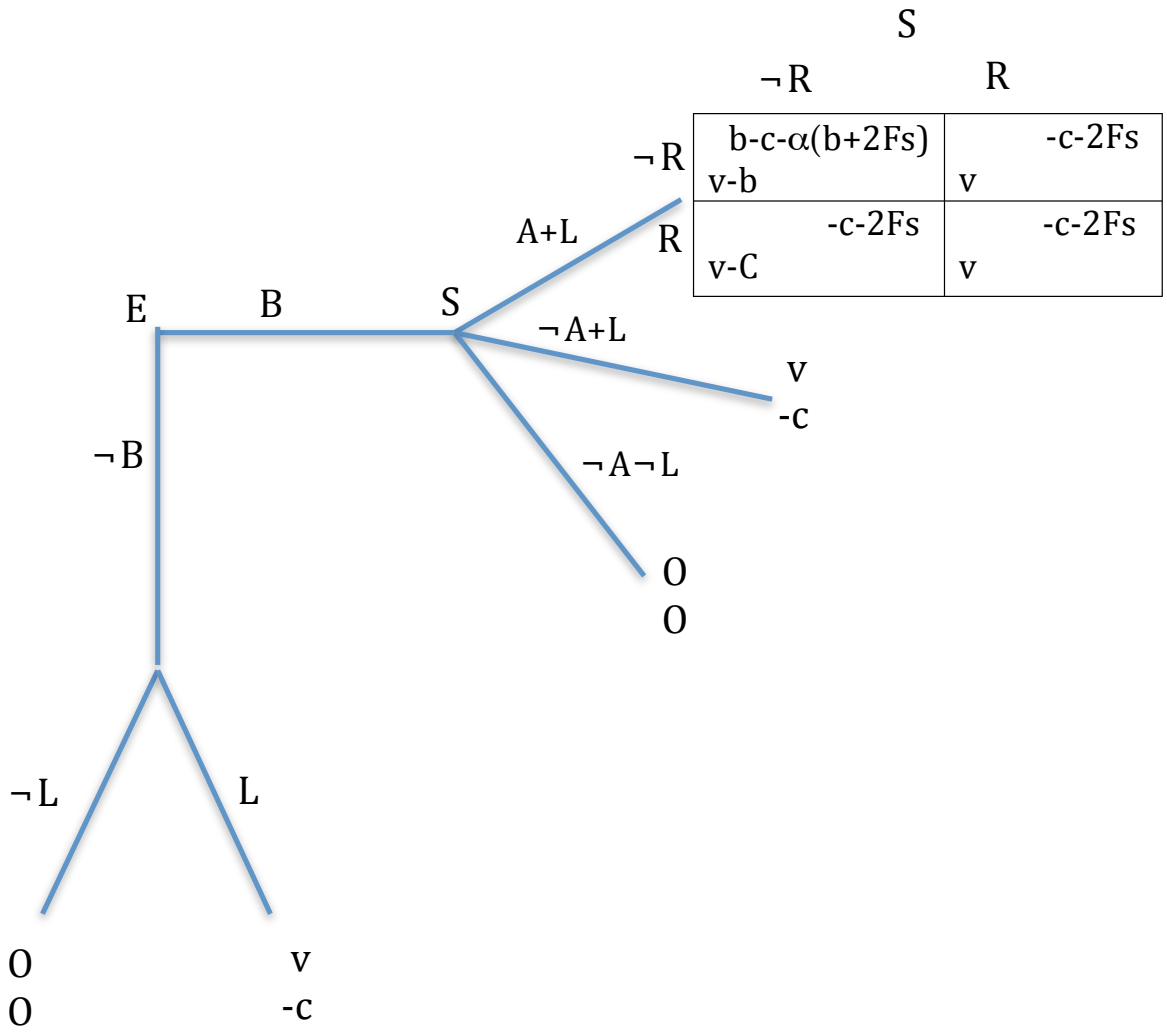

FIGURE 6: LENIENCY + MORAL COSTS + EXOGENOUS CONVICTION